



Report Summary

Between August and October 2014, 77 reports were received through the Eyes of the Reef Network. Two Rapid Assessments were initiated. A statewide bleaching event is being closely monitored. Results from flying gurnard samples indicate natural causes.

Coral Bleaching

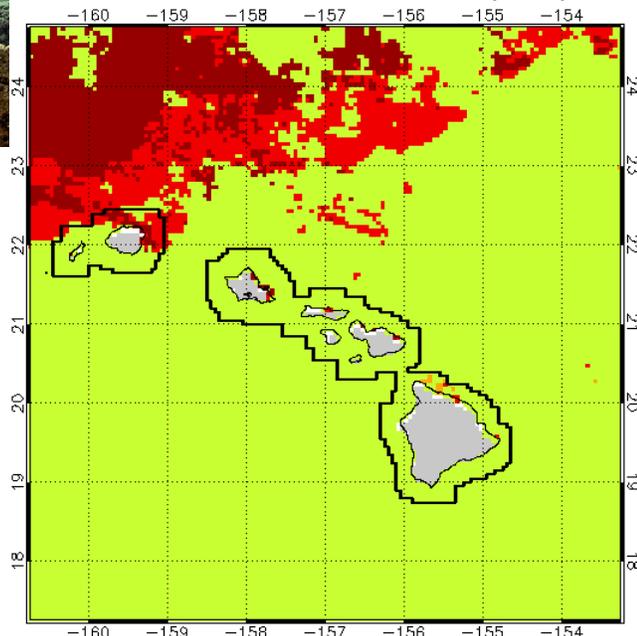
63 coral bleaching reports were received through the Eyes of the Reef Network between August—October 2014. Extensive bleaching was observed with select areas reaching an “Alert Level 2” status. A DAR Rapid Response team was deployed and surveys occurred on Oahu, Kauai, and Maui.



DAR Rapid Response Team lead, Brian Neilson (photo credit: Catlin Seaview Survey)

NOAA Current Bleaching Alert Levels

- No Stress **No bleaching**
- Bleaching Watch **Possible bleaching**
- Bleaching Warning **Possible bleaching**
- Alert Level 1 **Bleaching Likely**
- Alert Level 2 **Coral Mortality Likely**



Coral Disease

There were a total of 13 EOR Network reports of coral disease in Aug—Oct 2014. All of the reports were from the north shore of Kauai due to the ongoing Black Band Disease outbreak. Additional monitoring work by the University of Hawaii took place there in August and October, results are pending. Education and outreach

DAR staff also surveyed coral disease in Molokini crater. Tissue loss and bleaching was observed during these surveys.



DAR Coral disease survey results at Molokini

	Total Number of EOR Reports Received in Aug - Oct 2014
Coral Bleaching	63
Coral Disease	13
COTS	0
Fish Mortality	0
Other	2

Other Reports

1 report was received concerning sedimentation. An unusual algae on Kauai was identified as *Chrysocystis fragilis*. Results from laboratory tests of the flying gurnards revealed that their mortality event was likely due to natural causes.



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www.dlnr.hawaii.gov/reefresponse

Reef Response

Coral Bleaching Current Conditions – Aug - Oct 2014

Rapid Assessment of Coral Bleaching, Disease, COTS, and Marine Life Mortality events



Bleaching Conditions Summary:

NOAA Coral Reef Watch indicated bleaching alert levels reaching Alert Level 2 in the MHI between Aug - Oct and currently remain at a Bleaching Watch.

The DAR Rapid Response Team was deployed and surveyed areas on Kauai, Oahu, and Maui.

63 citizen reports were received through the EOR Network.

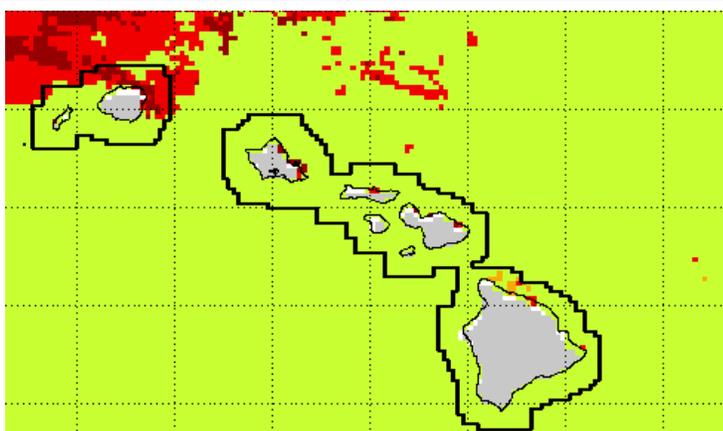
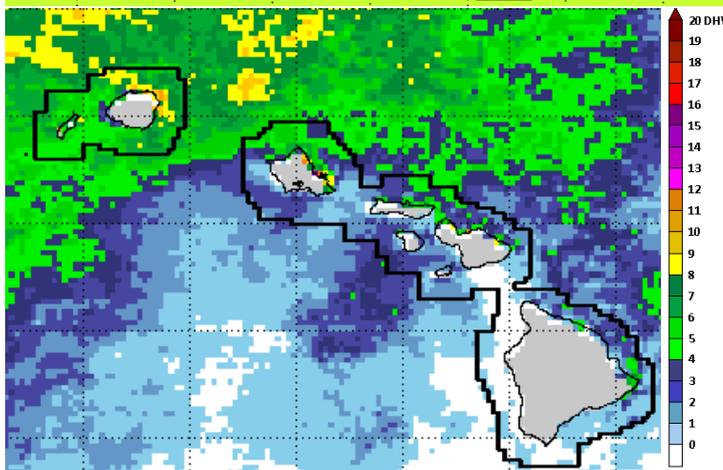


Figure 1. Current NOAA CRW Bleaching Alert Area, Exp. 5 km 10/28/2014



NOAA Bleaching Alert Levels

No Stress	No bleaching
Bleaching Watch	Possible bleaching
Bleaching Warning	Possible bleaching
Alert Level 1	Bleaching Likely
Alert Level 2	Coral Mortality Likely

Figure 2. NOAA CRW Degree Heating Week, 10/27/2014

Fig 3. NOAA Virtual Station Thermal Stress Levels—10/27/2014

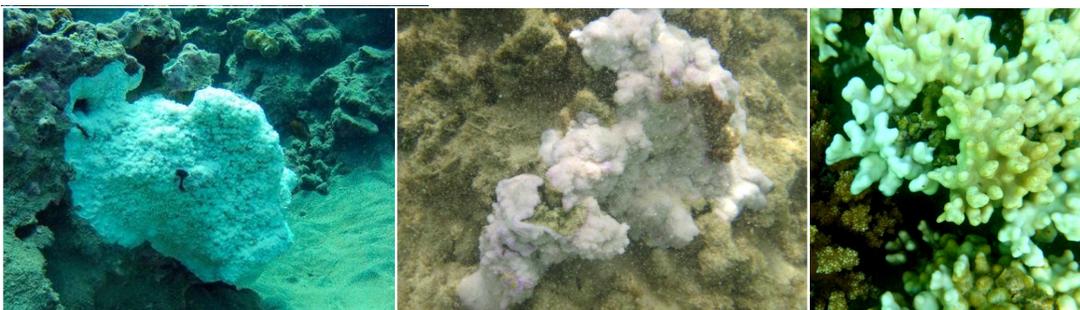
Kauai and Niihau	Bleaching Watch
Oahu	Bleaching Watch
Maui and Molokai	Bleaching Watch
Lanai	Bleaching Watch
Kona, Hawaii Island	Bleaching Watch
Hilo, Hawaii Island	Bleaching Watch

NOAA Coral Reef Watch Summary

A NOAA Coral Reef Watch “Bleaching Watch” is issued when sea surface temperatures (SST) in those areas may be causing low-level thermal stress to corals. The alerts are scaled based on the intensity of the bleaching risk. These products are experimental and generally tend to overestimate bleaching conditions. Currently, all islands have reached the “watch” threshold, indicating a low risk of mass coral bleaching (Figure 1). The Degree Heating Week map (Figure 2) depicts accumulated thermal stress. Areas within the MHI have reached level 16-17, indicating high accumulated thermal stress. Peak bleaching season is from July—September.

Data from NOAA’s virtual stations are derived from the operational 50m satellite products. Virtual offshore measuring stations indicate that Sea Surface Temperatures (SST) surpassed the maximum monthly mean at all stations in the MHI during Aug - Oct (Figure 3).

EOR Network Coral Bleaching Reports



DAR received 63 reports of coral bleaching statewide through the Eyes of the Reef (EOR) Network. Reports came from Kauai, Oahu, Maui, Molokai, Lanai, and Hawaii island. The reports indicated varying levels of bleaching from pale, to spotty, and completely white. The DAR Rapid Response team prioritized surveys to the worst affected areas on 5 areas on windward Oahu and 3 on the east and south shores of Kauai. The Rapid Response Team also tagged over 20 colonies in Kaneohe Bay to monitor for recovery.



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Reef Response

Coral Disease Current Conditions – Aug - Oct 2014

Rapid Assessment of Coral Bleaching, Disease, COTS, and Marine Life Mortality events



Coral Disease Conditions Summary:

In October 2014, the Kauai cyanobacterial coral disease continues to affect three species of rice (*Montipora*) corals along the north shore. A DAR-led Management Response Team was formed in January 2014. UH conducted surveys in Aug. and Oct. 2014, results are pending.

The EOR Network received 13 reports of coral disease between Aug–Oct 2014. DAR staff also conducted a follow-up survey at Molokini.

Aug - Oct 2014 Coral Disease Summary

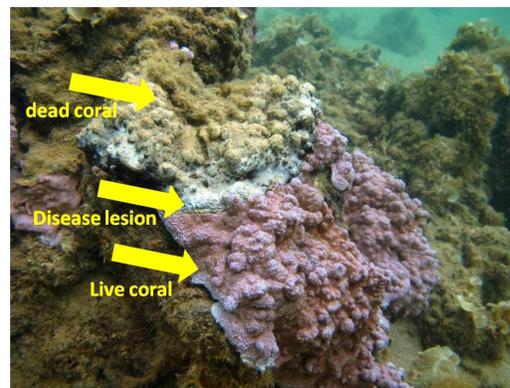
Overall, the causes of coral disease events are relatively poorly understood. Diseased coral often die quickly, outbreaks can change dramatically and can vary seasonally. Disease outbreaks often follow other disturbances including bleaching, flood plumes, and storms. These stresses all disturb coral due to physical injury and/or coral physiology. Reduced coral health leads to an increase in disease risk.

There have been four coral disease outbreaks in the MHI since 2008. The most recent outbreak occurred on the north shore of Kauai, first recorded at an epidemic level in 2012. In 2013, DAR helped to support a PhD student from the Hawaii Institute of Marine Biology who is mapping the prevalence of the Black Band Disease (BBD) and measuring potential environmental drivers. In January 2014, DAR coordinated the formation of a Management Response Team (MRT) to review incoming monitoring data and discuss effective management actions. Several other agency partners have been instrumental in this effort including NOAA, USGS, UH, EPA, UH SeaGrant, and several Kauai-based organizations. Additional surveys took place in August and October 2014, results are pending.

For more information and latest updates, please go to the team's website: <http://dlnr.hawaii.gov/reefresponse>



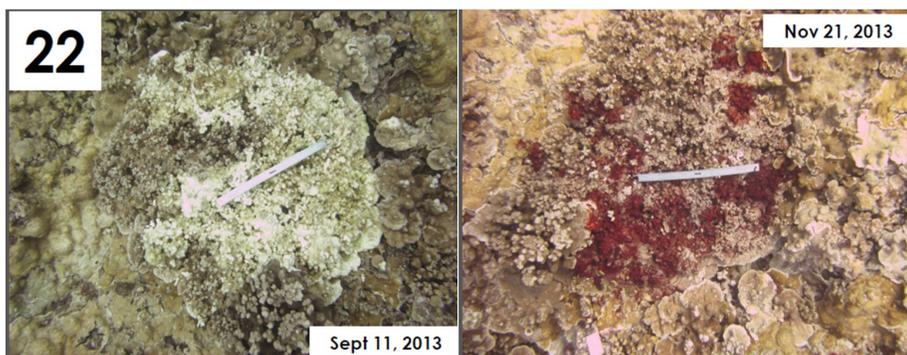
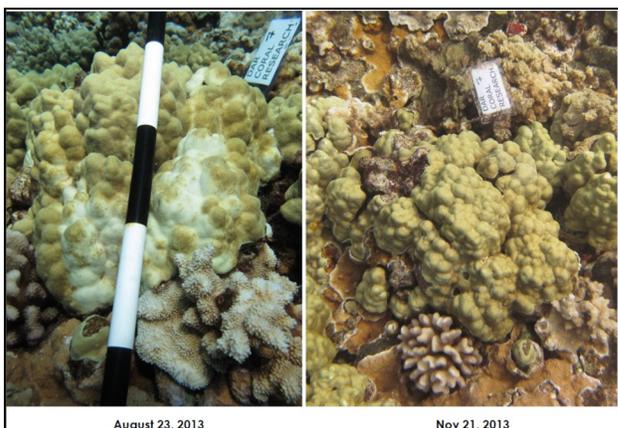
DAR Education Specialist on Kauai. Photo credit: DAR



BBD on a *Montipora* coral. Photo credit: C. Runyon (UH)

EOR Network Coral Disease Reports

There were a total of 13 EOR Network reports of coral disease between Aug - Oct 2014. All reports were from known locations of the BBD affecting the north shore of Kauai. DAR staff also conducted follow-up monitoring looking at coral disease at Molokini, near Maui.



DAR Coral disease survey results at Molokini, photo credit: DAR

For more information on coral disease, please visit DLNR's Reef Response website: www.dlnr.hawaii.gov/reefresponse



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Reef Response

COTS, Fish, Miscellaneous Current Conditions – Aug - Oct 2014

Rapid Assessment of Coral Bleaching, Disease, COTS, and Marine Life Mortality events



COTS, Fish, and Miscellaneous Conditions Summary:

There were 0 COTS or Fish reports between Aug - Oct 2014. 1 report of an unusual algae was reported on Kauai and later identified as *Chrysocystis fragilis*. It is thought to be seasonal though the exact cause is unknown.

Crown-of-Thorns-Starfish (COTS) and Miscellaneous Summary

Crown-of-thorns-starfish (COTS) are coral-eating starfish that have the potential to take over coral reefs quickly. Damaging outbreaks have been seen in other areas of the Pacific. In 2013, both the Great Barrier Reef in Australia and areas in American Samoa experienced severe outbreaks. In Hawaii, two localized COTS outbreaks were recently reported and assessed in 2012. Those have been the only major reports of COTS in large numbers since 2008.

Although not officially covered in the RRCF, the EOR Network does receive reports of other types of unusual events including fish disease, invasive species, native species blooms, and miscellaneous observations. This was valuable during the 2010 pufferfish die-off when the EOR Network was engaged to collect affected specimens.

EOR Network COTS Reports

There was one report of COTS in Hawaii in Aug-Oct 2014. No Rapid Assessments were initiated.

EOR Network Fish Disease/Mortality Reports

There were 0 EOR reports of fish mortality in Aug-Oct 2014. Laboratory results from the juvenile flying gurnards (*Dactyloptena orientalis*) on the south and west shore of Oahu and Kauai suggest it was due to natural causes.

EOR Network Miscellaneous Reports

The EOR Network received one report an unusual algae on Kauai in August 2014. It was identified as a bloom of *Chrysocystis fragilis*. This algae has been known to bloom in other locations in the Pacific including the Great Barrier Reef. It is thought to be a seasonal occurrence, although the exact cause is unknown.



Chrysocystis fragilis at Ke'e, photo credit: DAR

Blooms of *Chrysocystis fragilis* on the Great Barrier Reef

Received: 20 April 2004 / Accepted: 29 May 2004 / Published online: 28 September 2004
© Springer-Verlag 2004

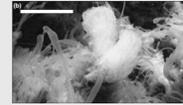
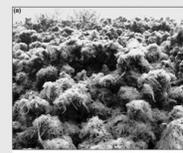


Fig. 1 a *Chrysocystis fragilis* bloom on dead standing coral, b *C. fragilis* colonies with two colonies of *Chrysocystis* visible in the center. Scale bar = 3 cm

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Reef sites

Extensive blooms of highly colonial chrysophytes have recently been observed on the Great Barrier Reef (GBR). The most threatening species is *Chrysocystis fragilis* (Chrysophyta: Chrysophyceae), which has been seen on the GBR, a previously unrecorded species. *C. fragilis* was first reported from Guam (Lobban et al. 1995) and has been also found at Christmas and Cocos Islands (A. Ayling, personal communication and Howard D. Smith, University of Hawaii, personal communication). *C. fragilis* is very delicate and readily disintegrates when disturbed. *C. fragilis* colonies are formed by single cells within an amorphous mucus matrix, forming macroscopic tube-like colonies ~2–30 cm long and ~0.2–1 cm wide of a characteristic golden-brown colour. The matrix was often colonised by diatoms and other microalgae.

In 2003/2004, *C. fragilis* was recorded on a number of GBR reef sites. It was found to be associated with dead standing coral (Squires et al. 2004). *C. fragilis* was also found on dead standing coral (Squires et al. 2004). *C. fragilis* was found to be associated with dead standing coral (Squires et al. 2004). *C. fragilis* was found to be associated with dead standing coral (Squires et al. 2004).

These are indications that a dense cover of chrysophytes has a negative effect on coral reefs. While the impact of the algae on coral reefs is not clear, the presence of *C. fragilis* on coral reefs may be a sign of reef degradation. *C. fragilis* is a highly sensitive species and its presence on coral reefs may be a sign of reef degradation. *C. fragilis* is a highly sensitive species and its presence on coral reefs may be a sign of reef degradation.

Keywords
Lobban CS, Howard D, Chilton M, Squires R (1995)
Chrysocystis fragilis sp. nov., a new chrysophyte
(Chrysophyta: Chrysophyceae), with notes on other macroalgae
Chrysocystis fragilis sp. nov. and *Chrysocystis*
2004:102

Excerpt: "Extensive blooms of benthic colonial chrysophyte algae have recently been observed on the Great Barrier Reef (GBR). The main bloom-forming species is *Chrysocystis fragilis* (Chrysophyta, Pelagophyceae), a new record for the GBR region. *C. fragilis* was described from Guam (Lobban et al. 1995) and has been also found at Christmas and Cocos Islands (A. Ayling, personal observations), Palau and Pohnpei (C. Lobban, University of Guam, personal communications) and Hawaii (J. Smith, University of Hawaii, personal communications). *C. fragilis* is very delicate and readily disintegrates when disturbed. *C. fragilis* colonies are formed by single cells within an amorphous mucus matrix, forming macroscopic tube-like colonies ~2–30 cm long and ~0.2–1 cm wide of a characteristic golden-brown colour. The matrix was often colonised by diatoms and other microalgae."

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